



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/064,808	08/20/2002	Ronald Scott Bunker	120478	7768

6147 7590 05/16/2005

GENERAL ELECTRIC COMPANY  
GLOBAL RESEARCH  
PATENT DOCKET RM. BLDG. K1-4A59  
NISKAYUNA, NY 12309

EXAMINER

PARSONS, THOMAS H

ART UNIT	PAPER NUMBER
----------	--------------

1745

DATE MAILED: 05/16/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/064,808

Applicant(s)

BUNKER, RONALD SCOTT

Examiner

Thomas H. Parsons

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31, 40 and 41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-31, 40 and 41 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***Response to Amendment***

This is in response to the Amendment filed 14 February 2004.

***Drawings***

1. The objection to Figures 1 and 2 as failing to be designated by a legend such as -- Prior Art-- has been **withdrawn** in view of Applicant's Amendment.
2. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(5) because they include reference character(s) not mentioned in the description has been **withdrawn** in view of Applicant's Amendment.
3. The objection to the drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include reference sign(s) mentioned in the description has been **withdrawn** in view of Applicant's Amendment.
4. The objection to the drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because the same reference character has been used to designate different parts has been **withdrawn** in view of Applicant's Amendment.
5. The objection to the drawings as failing to comply with 37 CFR 1.84(p)(4) because different reference characters have both been used to designate the same part has been **withdrawn** in view of Applicant's Amendment.
- 6.

***Specification***

7. The objection to the disclosure because of minor informalities has been **withdrawn** in view of Applicant's Amendment.

***Claim Rejections - 35 USC § 102***

8. The rejection of claims 1-4, 9, 13, 21-23, 25, 32-34, 38, 40-41 under 35 U.S.C. 102(b) as being anticipated by JP10-255827 has been **withdrawn** in view of Applicant's Amendment.

***Claim Rejections - 35 USC § 103***

9. The rejection of claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claims 1-4 above, and further in view of JP9-223512 has been **withdrawn** in view of Applicant's Amendment.

10. The rejection of claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claims 1-4 above, and further in view of JP9-223512 as applied to claims 5-6 above, and further in view of Applicants' admitted prior art has been **withdrawn** in view of Applicant's Amendment.

11. The rejection of claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claims 1 and 2 above, and further in view of Williams et al. (5,413,878) has been **withdrawn** in view of Applicant's Amendment.

12. The rejection of claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claims 1 and 2 above, and further in view of EP0374368 has been **withdrawn** in view of Applicant's Amendment.

13. The rejection of claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claim 1 above, and further in view of Scheffler et al. (4,859,545) has been **withdrawn** in view of Applicant's Amendment.

Art Unit: 1745

14. The rejection of claims 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claim 1 above, and further in view of

Applicant's admitted prior art has been **withdrawn** in view of Applicant's Amendment.

15. The rejection of claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claim 1 above, and further in view of Applicant's

admitted prior art as applied to claim 17 above, and further in view of EP0374368 has been **withdrawn** in view of Applicant's Amendment.

16. The rejection of claims 26-27, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP255827 in view of Applicants admitted prior art, and in view of EP0374368 has been **withdrawn** in view of Applicant's Amendment.

18. The rejection of claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP255827 in view of Applicants admitted prior art, and further in view of EP0374368, and further in view of JP9-223512 has been **withdrawn** in view of

Applicant's Amendment.

17. The rejection of claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claim 32 above, and further in view of Scheffler et al.

(4,859,545) has been **withdrawn** in view of Applicant's Amendment.

18. The rejection of claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claims 32-34 above, and further in view of

JP9-223512, and further in view of Applicant's admitted prior art has been **withdrawn** in view of Applicant's Amendment.

Art Unit: 1745

19. The rejection of claim 10, 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 as applied to claim 1 and 21 above, and further in view of Gillett et al. has been **withdrawn** in view of Applicant's Amendment.

***Response to Arguments***

20. Applicant's arguments with respect to claims 1-32 and 40-41 have been considered but are moot in view of the new ground(s) of rejection.

***(NEW) DETAILED ACTION***

***Claim Rejections - 35 USC § 103***

21. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

22. Claims 1-4, 9, 12-13, 21-23, 25, 32-34, 38 and 40-41 rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. (5,688,610).

**Claim 1:** JP10-255827 discloses in Figures 1-3 a fuel cell assembly comprising: an inlet and an outlet and at least one bypass flow channel ( $8^{1-N}$ ,  $9^{1-N}$ ), the bypass flow channel being configured to be in fluid communication with the inlet, the inlet and outlet being configured to provide fluid communication to and from the fuel cell assembly, respectively; at least one fuel cell stack ( $1^1$ - $1^N$ ) and at least one direct flow channel (via  $6^{1-N}$ ,  $7^{1-N}$ ), the at least one fuel cell stack comprising at least one fuel cell ( $1^1$ ), and the direct flow channel being configured to be in fluid communication with the inlet and

Art Unit: 1745

outlet; and a control system (5), which is configured to control an oxidant flow (3) from the inlet to the direct and bypass flow channels (abstract, and paragraphs [0008]-[0014]).

JP10-255827 does not disclose a housing having an inlet and an outlet and defining at least one bypass flow channel.

Spaeh et al. in Figures 1 and 2 define a housing (14) having an inlet (4) and an outlet (4) configured to provide fluid communication to and from the housing, and wherein supply air is freely guided to the cell within the housing which would provide a bypass flow of air (col. 2: 26-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fuel cell assembly of JP10-255827 by incorporating the housing of Spaeh et al. because Spaeh et al. teach a housing that would have provided an air supply guidance means common to a plurality of fuel cell stacks and is not connected directly with the fuel cell stacks thus providing an easy interchangeably of individual fuel cell stacks thereby improving the overall efficiency and maintenance costs.

Accordingly, the JP10-255827 combination would obviously provide at least one bypass flow channel defined by the housing and an inlet and configured to provide fluid communication to and from the housing.

**Claims 2 and 22:** The rejection is as set forth above in claim 1 wherein further JP10-255827 discloses in Figures 1-3 a bypass flow channel further configured to be in fluid communication with the outlet (abstract).

**Claims 3 and 25:** The rejection is as set forth above in claim 1 wherein further JP10-255827 discloses in Figures 1-3 a control system configured to adjust the oxidant

Art Unit: 1745

flow to the direct and bypass flow channels in response to a feedback signal (i.e. abnormality detecting device 4 is inputted to a bypass and direct control valve) (abstract).

**Claim 4:** The rejection is as set forth above in claim 1 wherein further JP10-255827 discloses in Figures 1-3 a control system comprising: at least one flow regulator ( $11^1$ ,  $9^1$ ), which is configured to regulate the oxidant flow to the direct and bypass flow channels; a flow controller (5), which is configured to receive the feedback signal and to actuate the at least one flow regulator; and at least one control sensor (4), which is configured to supply the feedback signal to the flow controller.

**Claim 9:** The rejection is as set forth above in claim 1 wherein further JP10-255827 discloses in Figures 1-3 a flow regulator comprising at least one control valve (11 and 9).

**Claim 12:** The rejection is as set forth above in claim 1 wherein further Spaeh et al. disclose an outlet configured to be in fluid communication with a subsequent inlet of a subsequent fuel cell assembly (col. 3: 26-39 and Figure 3)

**Claim 13:** The rejection is as set forth above in claim 1 wherein further JP10-255827 discloses in Figures 1-3 an inlet configured to be in fluid communication with a preceding outlet of a preceding fuel cell assembly.

**Claims 21 and 23:** JP10-255827 discloses in Figures 1-3 a fuel cell assembly comprising: an inlet and an outlet, the inlet and outlet being configured to provide fluid communication to and from the fuel cell, respectively; at least one bypass flow duct ( $8^{1-N}$ ,  $9^{1-N}$ ) and configured to be in fluid communication with the inlet; at least one fuel cell stack ( $1^1$ - $1^N$ ) disposed within the housing and defining at least one direct flow channel (via  $6^{1-N}$ ,  $7^{1-N}$ ), the at least one fuel cell stack comprising at least one fuel cell ( $1^1$ ), and



Art Unit: 1745

the direct flow channel being configured to be in fluid communication with the inlet and outlet; and a control system (5), which is configured to control an oxidant flow (3) from the inlet to said direct flow channel and the bypass flow duct; and wherein the bypass flow duct extends along an outer wall of the housing (abstract, and paragraphs [0008]-[0014]).

JP10-255827 does not disclose a housing having an inlet and an outlet and defining at least one bypass flow channel.

Spaeh et al. in Figures 1 and 2 define a housing (14) having an inlet (4) and an outlet (4) configured to provide fluid communication to and from the housing, and wherein supply air is freely guided to the cell within the housing which would provide a bypass flow of air (col. 2: 26-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fuel cell assembly of JP10-255827 by incorporating the housing of Spaeh et al. because Spaeh et al. teach a housing that would have provided an air supply guidance means common to a plurality of fuel cell stacks and is not connected directly with the fuel cell stacks thus providing an easy interchangeably of individual fuel cell stacks thereby improving the overall efficiency and maintenance costs.

Accordingly, the JP10-255827 combination would obviously provide at least one bypass flow channel defined by the housing and an inlet and configured to provide fluid communication to and from the housing.

**Claim 40:** JP10-255827 discloses in Figures 1-3 a fuel cell assembly comprising: an inlet and an outlet and at least one bypass flow channel ( $8^{1-N}$ ,  $9^{1-N}$ ), which is

Art Unit: 1745

configured to be in fluid communication with the inlet and the outlet, the inlet and outlet being configured to provide fluid communication to and from the fuel cell assembly, respectively; at least one fuel cell stack ( $1^1-1^N$ ) and at least one direct flow channel (via  $6^{1-N}$ ,  $7^{1-N}$ ), the at least one fuel cell stack comprising at least one fuel cell ( $1^1$ ), and the direct flow channel being configured to be in fluid communication with the inlet and outlet; and a control system (5), which is configured to control an oxidant flow (3) through the direct and bypass flow channels (abstract, and paragraphs [0008]-[0014]).

JP10-255827 does not disclose a housing having an inlet and an outlet and defining at least one bypass flow channel.

Spaeh et al. in Figures 1 and 2 define a housing (14) having an inlet (4) and an outlet (4) configured to provide fluid communication to and from the housing, and wherein supply air is freely guided to the cell within the housing which would provide a bypass flow of air (col. 2: 26-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fuel cell assembly of JP10-255827 by incorporating the housing of Spaeh et al. because Spaeh et al. teach a housing that would have provided an air supply guidance means common to a plurality of fuel cell stacks and is not connected directly with the fuel cell stacks thus providing an easy interchangeably of individual fuel cell stacks thereby improving the overall efficiency and maintenance costs.

Accordingly, the JP10-255827 combination would obviously provide at least one bypass flow channel defined by the housing and an inlet and configured to provide fluid communication to and from the housing.

Art Unit: 1745

**Claim 41:** The rejection of claim 41 is as set forth above in claim 4.

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claims 1-4 above, and further in view of JP7-249419.

JP10-255827 and Spaeh et al. are as applied, argued, and disclosed above and incorporated herein.

**Claims 5 and 6:** The JP10-255827 combination does not disclose a control sensor (abnormality detecting device) configured to monitor a parameter selected from the group consisting of temperature, voltage, electrical current, and heat flux; and, wherein said control sensor comprises a temperature sensor.

JP7-249419 discloses a control sensor (abnormality detecting device) configured to monitor temperature and, wherein the control sensor comprises a temperature sensor (a thermocouple)(paragraph [0077]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the control sensor of the JP10-255827 combination by incorporating the control sensor of JP7-249419 because JP7-249419

Art Unit: 1745

teaches a control sensor that would have provided a means for eliminating the temperature distribution within a fuel cell thereby stabilizing cell performance and prolonging cell lifetime.

25. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claims 1-4 above, and further in view of JP7-249419 as applied to claims 5-6 above, and further in view of Applicants' admitted prior art.

JP10-255827, Spaeh et al. and JP7-249419 are as applied, argued, and disclosed above, and incorporated herein.

**Claims 7 and 8:** The JP10-255827 combination does not disclose an invasive temperature sensor and a non-invasive temperature sensor.

The Applicant discloses in paragraph [0025] known invasive temperature sensors, which are in intimate contact with a downstream control point, and non-invasive temperature sensor, which are in remote communication with an upstream control point.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention made to have modified the control sensor of the JP10-255827 combination by incorporating the control sensors of the Applicants' admitted prior art because the Applicant discloses known control sensor that would have provided temperature detection at an upstream control point and a downstream control point thereby providing a means for improving the overall operating efficiency and control of the fuel cell.

Art Unit: 1745

26. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claims 1 and 2 above, and further in view of EP0374368.

JP10-255827 and Spaeh et al. are as applied, argued, and disclosed above, and incorporated herein.

**Claims 14 and 15:** The JP10-255827 combination does not disclose a housing configured to be pressurized, and wherein the inlet is configured to be in fluid communication with a preceding outlet of a turbine engine, and wherein the outlet is configured to be in fluid communication with a subsequent inlet of a turbine engine.

EP0374368 in the Figure discloses a housing (20) configured to be pressurized, and wherein the inlet (to cathode 12) is configured to be in fluid communication with a preceding outlet of a turbine (16) engine (via compressor 10), and wherein the outlet is configured to be in fluid communication with a subsequent inlet of a turbine engine (16) (col. 3: 6-8 and 22-25) (See also col. 3: 1-col. 4: 15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the JP10-255827 combination with the pressurized housing and turbine of EP0374368 because EP0374368 discloses a pressurized housing and turbine that would have provided a pressurized environment for electrochemically reacting a pressurized oxidant stream thereby improving the overall operating efficiency and power density of the fuel cell.

Art Unit: 1745

27. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claim 1 above, and further in view of Scheffler et al. (4,859,545).

JP10-255827 and Spaeh et al. are as applied, argued, and disclosed above, and incorporated herein.

**Claim 16:** The JP10-255827 combination discloses a bypass flow channel but not a bypass flow channel configured to recycle at least a portion of the oxidant flow through the bypass flow channel to an inlet.

However, it would have been within the skill of one having ordinary skill in the art of process control and feedback systems to modify the apparatus of the JP10-255827 combination to provide the configuration to recycle at least a portion of the oxidant flow through the bypass flow channel to an inlet.

28. Claims 17, 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claim 1 above, and further in view of Applicant's admitted prior art.

JP10-255827 and Spaeh et al. are as applied, argued, and disclosed above, and incorporated herein.

**Claims 17, 19 and 20:** The JP10-255827 combination discloses a fuel cell system but does not disclose cells selected from the group consisting of a solid oxide fuel cell, a proton exchange membrane fuel cell, a molten carbonate fuel cell, a phosphoric acid fuel cell, an alkaline fuel cell, a direct methanol fuel cell, a regenerative fuel cell, a zinc air fuel cell, and a protonic ceramic fuel cell; wherein said at least one fuel cell stack

Art Unit: 1745

comprises a plurality of planar fuel cells arranged in a stack; and, wherein said at least one fuel cell stack comprises a plurality of fuel cells arranged in a tubular configuration.

The Applicant discloses in paragraphs [0002] and [0021] known fuel cells consisting of a solid oxide fuel cell, a proton exchange membrane fuel cell, a molten carbonate fuel cell, a phosphoric acid fuel cell, an alkaline fuel cell, a direct methanol fuel cell, a regenerative fuel cell, a zinc air fuel cell, and a protonic ceramic fuel cell; wherein said at least one fuel cell stack comprises a plurality of planar fuel cells arranged in a stack; and, wherein said at least one fuel cell stack comprises a plurality of fuel cells arranged in a tubular configuration.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fuel cell system of JP10-255827 combination with known fuel cells as disclosed in the Applicant's admitted prior art because the Applicant discloses known fuel cells of a specific type and configuration that would have provided energy conversion devices that operate at high efficiency and low pollution thereby providing cost advantages.

29. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claim 1 above, and further in view of Applicant's admitted prior art as applied to claim 17 above, and further in view of EP0374368.

JP10-255827, Spaeh et al. and Applicant's admitted prior art are as applied, argued and disclosed above, and incorporated herein.

**Claim 18:** The JP10-255827 combination does not disclosed a pressure vessel.

Art Unit: 1745

EP0347368 in the Figure discloses a housing (20) configured to be pressurized (col. 3: 1-col. 4: 15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of JP10-255827 combination with the pressurized housing of EP0374368 because EP0374368 discloses a pressurized housing that would have provided a pressurized environment for electrochemically reacting a pressurized oxidant stream thereby improving the overall operating efficiency and power density of the fuel cell.

30. Claims 26-27, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP255827 in view of Spaeh et al. in view of Applicants admitted prior art, and in view of EP0374368.

**Claims 26, 27, 30 and 31:** The rejection is as set forth above in claim 1. However, the JP10-255827 combination does not disclose a housing configured to be pressurized, and wherein the inlet is configured to be in fluid communication with a preceding outlet of a turbine engine, and wherein the outlet is configured to be in fluid communication with a subsequent inlet of a turbine engine.

EP0374368 in the Figure discloses a housing (20) configured to be pressurized, and wherein the inlet is configured to be in fluid communication with a preceding outlet of a turbine (16) engine, and wherein the outlet is configured to be in fluid communication with a subsequent inlet of a turbine engine (16) (col. 3: 6-8 and 22-25) (See also col. 3: 1-col. 4: 15).



Art Unit: 1745

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the JP10-255827 combination with the pressurized housing and turbine of EP0374368 because EP0374368 discloses a pressurized housing and turbine that would have provided a pressurized environment for electrochemically reacting a pressurized oxidant stream thereby improving the overall operating efficiency and power density of the fuel cell.

The JP10-255827 combination does not disclose a planar solid oxide cell stack, and a plurality of planar solid oxide fuel cells arranged in a stack.

The Applicant discloses in paragraphs [0002] and [0021] known fuel cells consisting of a solid oxide fuel cell; and, wherein said at least one fuel cell stack comprises a plurality of planar fuel cells arranged in a stack.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the fuel cell system of the JP10-255827 combination with known fuel cells as disclosed in the Applicant's admitted prior art because the Applicant discloses known fuel cells of a specific type and configuration that would have provided energy conversion devices that operate at high efficiency and low pollution thereby providing cost advantages.

18. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP255827 in view of Spaeh et al., and further in view of Applicants admitted prior art, and further in view of EP0374368, and further in view of JP9-223512.

**Claims 28 and 29:** JP10-255827, Applicant's admitted prior art, and EP0347368 is as applied, argued, and disclosed above and incorporated herein, and wherein further

Art Unit: 1745

JP10-255827 discloses control system configured to repeatedly monitor feedback signals and comprising: a flow regulator (11, 9), which is configured to regulate the oxidant flow (3) to the direct and bypass flow channels; a flow controller (5), which is configured to communicate a feedback signal and to actuate the at least one flow regulator, and at least one control sensor (abnormality detector), which is configured to generate the feedback signal from at least one control point and communicate the feedback signal to the flow controller.

The JP10-255827 combination does not disclose a control sensor (abnormality detecting device) configured to monitor temperature wherein said control sensor comprises a temperature sensor.

JP9-223512 in Figure 1 discloses a control sensor (abnormality detecting device) configured to monitor temperature and, wherein the control sensor comprises a temperature sensor (a thermocouple)(abstract).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the control sensor of the JP10-255827 combination by incorporating the control sensor of JP9-223512 because JP9-223512 teaches a control sensor that would have provided a means for measuring temperature and load current variations in a fuel cell thereby providing a means for improving the overall operating efficiency and control of the fuel cell.

31. Claim 10, 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP10-255827 in view of Spaeh et al. as applied to claim 1 and 21 above, and further in view of Gillett et al.

Art Unit: 1745

JP10-255827 and Spaeh et al. are as applied, argued, and disclosed above, and incorporated herein.

**Claims 10, 11 and 24:** the JP10-255827 combination does not disclose a bypass oxidant flow channel extending along an inner surface of the housing, disposed within the housing, or flow liner.

Gillett et al. in Figures 2 and 4 disclose a housing enclosing fuel cell stack assembly modules including flow ducts. Gillett et al. disclose that ducting can be on the sides, top or bottom of the module housing, and any suitable ducting is within the invention. Gillett also discloses that thermal insulation (which has been construed as a flow liner) is disposed within the housing and that ducting disposed between said flow liner and said housing and extends along an inner surface of said housing.

Therefore, it would have been within the skill of the art at the time the invention was made to have modified the housing of JP10-255827 combination by incorporating the housing of Gillett et al. because Gillett et al. teach a housing for a fuel cell module that would have provided a totally pressurized or non-pressurized enclosed system for the fuel cells including direct and bypass ducting and a liner that would have prevented high temperatures at the vessel wall thereby improving the functionality of the system, and overall performance and efficiency of the power generating system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas H. Parsons whose telephone number is (571) 272-1290. The examiner can normally be reached on M-F (7:00-4:30) First Friday Off.

Art Unit: 1745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thomas H Parsons  
Examiner  
Art Unit 1745

\*\*\*



**PATRICK JOSEPH RYAN**  
**SUPERVISORY PATENT EXAMINER**